C. Remarks

This submission is in response to the Communication dated March 12, 2004, alleging that Applicants' November 6, 2003 Response to the Office Action of August 6, 2003 was not fully responsive. Specifically, the Examiner alleged that the November 6, 2003 Response did not include a discussion of all prior art rejections. Applicants strongly disagree with the Examiner.

Under 37 C.F.R. § 1.111(b), in order to be responsive, a reply to the Office Action must distinctly and specifically point out the supposed errors in the Examiner's action and must present arguments pointing out the specific distinctions believed to render the claims patentable over any applied references. Applicants respectfully submit the November 6, 2003 response complied with these requirements.[1]

Specifically, in the November 6, 2003 Response, Applicants recited all prior art rejections on page 3.[2] Subsequently, on pages 3-5, Applicants discussed some of the key features of the presently claimed invention and compared them to what is conventionally known in the prior art. On page 5, Applicants pointed out that all of the references cited by the Examiner merely teach conventional techniques, which were

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[1]/Applicants note that the Examiner's supervisor agreed in a telephonic interview that the November 6, 2003 Response met the formal requirements and could be considered fully responsive.

[2]/Since Applicants believe that the Examiner is only objecting to the completeness of the response to the prior art rejections, only these rejections are specifically discussed below with respect to the March 12, 2004 Communication.

already discussed in detail, and lack specific features of the presently claimed invention as recited in parts (b) and (c) of claim 16.[3]

It is clear that prior art references can be discussed individually or collectively. The fact that in the November 6, 2003 Response the prior art references are discussed collectively, in view of them lacking the same presently claimed features, does not make the Response incomplete.

Therefore, clearly, Applicants have complied with the requirements of 37 C.F.R. § 1.111(b). However, in order to expedite prosecution, Applicants re-represent all the arguments presented in the November 6, 2003 Response, with even further clarifications added to the discussion of the prior art rejections.

In the March 12, 2004 Communication, the Examiner requested that a listing of all claims in the subject application be provided, because it is unclear whether claim 22 in under consideration. While Applicants respectfully point out that on page 2, lines 2-3, of the November 6, 2003 Response it is explicitly stated that claim 22 is at issue, a complete listing of all claims in the application is provided in part B above.

RESPONSE TO AUGUST 6, 2003 OFFICE ACTION

The claims are 1-71. Claims 1-15 and 23-71 have been withdrawn from consideration as being directed to non-elected inventions. The claims at issue are 16-22, with claim 16 being the sole independent claim. Reconsideration of the present claims is expressly requested.

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[3]/Part (b) is directed to the orientation of the polymer and part (c) is directed to how the orientation is achieved.

Claims 16-22 stand rejected under 35 U.S.C. § 112, second paragraph, as being allegedly indefinite. Specifically, the Examiner questioned the accuracy of the language in part (c) of claim 16, which states that the polymer is obtained by bonding finely fractionalized polymers. The Examiner has alleged that when a polymer is finely fractionalized by polymer cleavage, it can no longer be considered a polymer. Furthermore, the Examiner requested Applicants to explain why the polymer provided on a substrate is characterized by being made from fragments rather than by simply referring to its chemical structure.

With respect to the term "finely fractionalized polymer", this term is clearly defined in paragraph [0074] on page 16 of the substitute specification.[4] This definition clearly explains that a finely fractionalized polymer can be either a polymer or a monomer, depending on the cleavage. The mechanism and the sequence of steps for obtaining a polymer by bonding finely fractionalized polymers and the reasons therefor can be found throughout the specification and the drawings, for example in paragraphs [0094] - [0099], Comparative Example 2, and Figs. 5-7 and 23. The reasons for defining the polymer provided on the substrate as being made from bonded fragments rather than by simply referring to its chemical structure are due to the fact that the re-formed polymer has a more uniform orientation, which results in a better surface treatment, as explained in detail in the specification and discussed below with respect to the substantive rejections. Accordingly, the above indefiniteness rejection should be withdrawn.

[4/]All recitations of page and paragraph numbers for the subject application in this paper refer to the substitute specification, which was filed on July 1, 2003 and entered by the Examiner.

Claims 16 and 18-20 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by U.S. Patent No. 3,853,601 (Taskier). Claims 16-20 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by JP 62-267359 (Ona). Claims 16-20 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by JP 63-211369 (Yoshida). Claims 16 and 18-20 stand rejected under 35 U.S.C. § 102(b) as being allegedly anticipated by EP 0 542 485 A1 (Brown). Claims 16-21 stand rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Patent No. 5,998,650 (Schrock). Claims 16, 18, 19 and 21 stand rejected under 35 U.S.C. § 103(a) as being allegedly obvious from JP 1-30637 (Kutsuna). These rejections are respectfully traversed.

Prior to addressing the merits of rejection, Applicants would like to review some of the key features and advantages of the presently claimed invention, which are essential to understanding the differences between the instant invention and the prior art. The present claimed invention is directed to an element, which has a part of its surface treated with a polymer compound. For example, an element with a hydrophobic surface may be treated with a polymer so that at least a part of the surface becomes hydrophilic. The polymer compound is obtained by bonding fractionalized polymers with each other after these polymers are finely fractionalized by a catalyst for polymer cleavage.

Conventionally, a surface treatment is conducted by, for instance, coating a surface with a polymer compound having the desired wettability characteristics. In order to achieve a uniform and strongly adhered coating, the polymer compound has to be uniformly oriented and bonded to the surface. However, since it is hard to achieve a requisite uniform orientation of the functional groups in a polymer with respect to the

surface (particularly for polymers having long chains), both the adherence strength (particularly when the surface is uneven) and the uniformity of deposition in conventional treatment techniques are not adequate.

To overcome this problem, the polymer used to treat the surface in the present invention is cleaved to obtain finely fractionalized polymers, which can be more easily re-oriented with respect to the surface than their larger polymeric predecessors (see paragraphs [0094] - [0100], [0111] - [0114] and Figs. 5-7 and 23). After the finely fractionalized polymers have been re-oriented so that their second parts[5] are pointed toward the surface and the functional groups are pointed away from the surface, the finely fractionalized polymers are at least partially re-bonded, resulting in a uniformly oriented, strong coating on the surface of an element being treated.

The superiority of the treated surface according to the present invention is clearly demonstrated by, for example, Example 1 and Comparative Example 2. Specifically, in both Example 1 and Comparative Example 2 a hydrophobic surface of a container was treated with polyoxyalkylene-poly(dimethyl siloxane). While in Example 1 this polymer was first finely fractionalized, re-oriented and then re-bonded, the surface in Comparative Example 2 was merely coated with the above-mentioned polymer.[6] As a result, the coating in Example 1 was better adhered to the surface of the container than in Comparative Example 2 due to a more uniform orientation of the functional groups in the

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[5/] Second parts have an interfacial energy (i) different from that of the functional groups that impart the treated surface with the desired characteristics; and (ii) approximately equal to the surface energy of the part of the surface being treated,

[6/]The coating composition in Comparative Example 2 does not contain sulfuric acid, which is used to cleave the polymer in Example 1.

polymer, leading to a surface that had undergone a successful hydrophilic treatment. The coating in Comparative Example 2 failed to provide the surface of the container with hydrophilic characteristics comparable to those in Example 1 (see paragraphs [0128] - [0131]).

The references cited by the Examiner are directed to a surface treatment with a polymer. However, unlike in the present claimed invention, the treatment in these references is performed in a conventional manner outlined above, and is not performed using polymers that are first finely fractionalized, re-oriented and then re-bonded.

Taskier is directed to a hydrophilic microporous film, comprising a hydrophobic film and a surfactant coating. However, Taskier does not disclose or suggest at least the features of parts (b) and (c) of claim 16. In particular, Taskier does not disclose or suggest that the coating polymer is finely fractionalized so that it can be re-oriented prior to re-bonding and being used as a coating. As shown by Comparative Example 2 in the subject application, finely fractionalizing the polymer and then at least partially re-bonding it results in a treated surface that is structurally different from the surface, which is treated with a polymer that has not undergone this process.[7] The orientation of the polymer is recited in part (b) of claim 16 and the fractionalizing and re-bonding is recited in part (c) of claim 16. Accordingly, Taskier cannot affect the patentability of the presently claimed invention.

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[7]This (i) explains the reason for reciting the polymer in the claims in a product-by-process form; and (ii) shows that the process imparts distinctive structural characteristics to the final product. See M.P.E.P. § 2113.

Ona is directed to a hydrophobic treatment of solids. The Examiner has alleged that Ona teaches organopolysiloxanes containing alkylene oxide side chains that are used to treat fibers of polyethylene or polypropylene. Even if assumed, arguendo, that the Examiner is correct, Applicants respectfully submit that Ona still cannot affect the patentability of the presently claimed invention, because it fails to disclose or suggest finely fractionalizing the polymer and then at least partially re-bonding it (part (c) of claim 16), which results in a more uniform orientation recited in part (b) of claim 16.

Furthermore, Ona teaches treating the surface of a cloth made from a combination of polyester and cotton. However, Ona fails to disclose or suggest a group having an interfacial energy approximately equal to the surface energy, with the group being oriented toward the surface. This is because cotton has a surface energy different from that of a polyester, and thus, the surface energy of the cloth cannot be uniform.

Yoshida is directed to the treatment of non-woven fabric with a surfactant, such as polysiloxane-polyoxyethylene copolymers. However, Yoshida does not disclose or suggest finely fractionalizing the polymer and then at least partially re-bonding it (part (c) of claim 16), which results in a more uniform orientation recited in part (b) of claim 16. Therefore, clearly, Yoshida cannot affect the patentability of the presently claimed invention.

Brown is directed to the use of certain catalysts in radiating curable compositions. The Examiner has alleged that Brown teaches organosilicon compounds containing 2+ siloxane groups per molecule and having polyoxyalkylene groups therein, which are used to treat polyethylene substrates. Even if assumed, arguendo, that the

Examiner is correct, Brown still fails to disclose or suggest finely fractionalizing the polymer and then at least partially re-bonding it (part (c) of claim 16), which results in a more uniform orientation recited in part (b) of claim 16. Thus, clearly, Brown cannot affect the patentability of the presently claimed invention.

Schrock discloses organosilicon compounds with amino-alkylene oxide functional groups. The Examiner has alleged that these compounds are used to treat fibers. Even if assumed, arguendo, that the Examiner is correct, Schrock still fails to disclose or suggest finely fractionalizing the polymer and then at least partially re-bonding it (part (c) of claim 16), which results in a more uniform orientation recited in part (b) of claim 16. Accordingly, it is clear that Schrock cannot affect the patentability of the presently claimed invention.

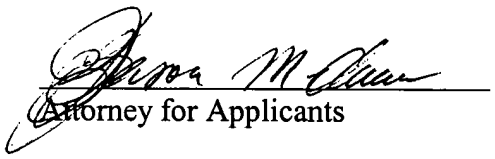
Kutsuna discloses emulsions that contain particles modified and/or coated with hydroxyl groups of alcohol and/or polyoxyalkylene. Applicants dispute the Examiner's allegation that it would have been obvious to react a siloxane and the polyalkylene compounds in presence of particles to ensure that the surface of the particles was completely treated. However, even if assumed, arguendo, that the Examiner is correct, Kutsuna still fails to disclose or suggest finely fractionalizing the polymer and then at least partially re-bonding it (part (c) of claim 16), which results in a more uniform orientation recited in part (b) of claim 16. Thus, Kutsuna cannot affect the patentability of the presently claimed invention.

In conclusion, Applicants respectfully submit that the cited references, whether considered separately or in any combination, do not disclose or suggest the

combination of elements presently claimed. Specifically, the cited references fail to disclose or suggest finely fractionalizing the polymer and then at least partially re-bonding it (part (c) of claim 16), which results in a more uniform orientation recited in part (b) of claim 16. Wherefore, it is respectfully requested that all outstanding rejections be withdrawn and that the present case be passed to issue.

Applicants' undersigned attorney may be reached in our New York office by telephone at (212) 218-2100. All correspondence should continue to be directed to our below listed address.

Respectfully submitted,



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